Assignment 2

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1 Introduction

In 1st part of this assignment firstly, I drew given shape as a triangle with the desired colors and then converted it to a line.
For the 2nd part, I drew the emoji in 1st assignment as a smaller then, rotated this emoji clockwise and counterclockwise 45 degrees as a loop, and finally made the color changes of the emoji while the emoji is rotating with using keyboard keys.

2 Experiment

2.1 Part 1

In this part, firstly, I changed the color of the triangles according to picture of triangle as a, for the first side of triangle to red, green, blue; for the 2nd side of triangle to green, blue, dark; for the 3rd side of triangle to blue, dark, red; for the 4th side of triangle to dark, red, green.Then, I drew it as a line loop in the drawArrays.

2.2 Part 2

In this section, I drew the emoji smaller for step 1 and fixed it. Then for step 2, I calculated the current angle against time in requestAnimatonFrame() and called the draw method to rotate the emoji [-45.45] degrees in a loop. The in step 3, I created a formula for this emoji to change color as it rotates and get the darkest color at the highest angle. I also used events and keyboard keys for these steps.

Table 1: Classes

Class Name	Attributes	Methods
initialize.js	-	loadShader, initShaderProgram
app.js	program, canvas, gl, currentRotation, currentScale, currentAngle, previousTime, degreesPerSecond, press2, firstpress, press1, press3, leftQuarter, rightQuarter, yellowColor, brownColor, whiteColor	main, calculateBezierCurvePosition, draw, drawShape, keyEvent, changeColor
shaders.js	vsSource, fsSource	-

Table 2: Methods

Method Name	Input(s)	Output(s)	Info
loadShader	gl, typeOfShader, sourceOfShader	shader	A new shader is created and compiled
initShaderProgram	gl, vsSource, fsSource	shaderProgram	Calling load shader method for shaders and create Program
main	-	-	main function
calculateBezierCurvePos	P0, P1, P2, t	xPos, yPos	To calculate points on bezier curves when I was drawing the emoji
draw	positions, colors	-	For create and bind buffer using vertex and colors arrays
drawShape	positionBuffer, vertexCount, colors	-	For draw shapes and requestAnimationFrame()
keyEvent	-	-	For events and steps whenever I press to get keyboard keys
changeColor	colors	newColors	For step 3, calculate colors of shape according to angle.

3 Conclusion

In this assignment, unlike other assignments, I learned animations, events and color changing. I think the most challenging part was adjusting the rotation in step 2.

References

- https://developer.mozilla.org/en-US/docs/Web/API/WebGL_API/Basic_2D_animation_example
- https://webglfundamentals.org/webgl/lessons/webgl-tips.html#tabindex
- https://webglfundamentals.org/webgl/lessons/webgl-2d-rotation.html